IOWA'S WATER
Ambient Monitoring Program

Accessing Iowa's Water Quality Information

In January of 2003, DNR's newest web-based data retrieval, IASTORET version 2, became available. The new application was rewritten from the ground up and relies heavily on Data Warehousing, a technique for storing data that can be quickly retrieved. Some new features include a design that allows retrievals from different organizations and their associated projects. All selection lists are created based on the chosen project(s) including stations, counties, watersheds and chemical parameters. Chemical parameters can be selected individually from a drop-down box or by STORET assigned groups, such as Bacteria, Pesticides, Metals, and Nutrients. Results can be sorted by STORETID, Station Name, Date and Parameter, or can be exported as pipe delimited text or XML files. Users have the option of downloading a brief report or a more detailed report. Results of three or fewer parameters can be transposed with a pivot table function and can be graphed through the web interface.

Searching the Database: An Example

An example outlining some of IASTORET's capabilities is provided in this fact sheet. Please follow along, as these directions should help familiarize you with the database. To start your tour of IASTORET, direct your browser to: http://wqm.igsb.uiowa.edu/iastoret.

Initially, IASTORET presents you with a list of organizations with water quality data. For this example, we will retrieve data from Iowa Dept. of Natural Resources. To access DNR data, select the organization – "21IOWA," and hit the "submit" button. On the screen you will see a list of projects, arranged alphabetically and by year. Select "BEA2002 – Beach Monitoring," and hit the "submit" button. The station selection list contains only stations related to the project(s) you selected in the previous screen. To demonstrate this, hit the back arrow on your browser and select a new project, "AMB2002 – En-

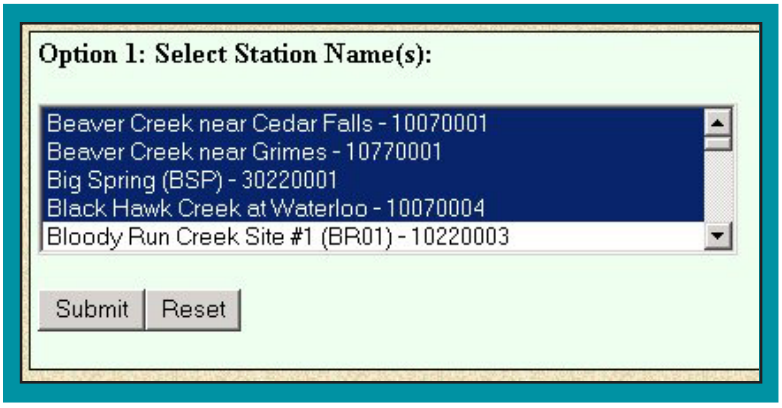


Figure 1. *Data retrieval from the IASTORET water quality database shows the selection of four stations in the AMB2002 project.*

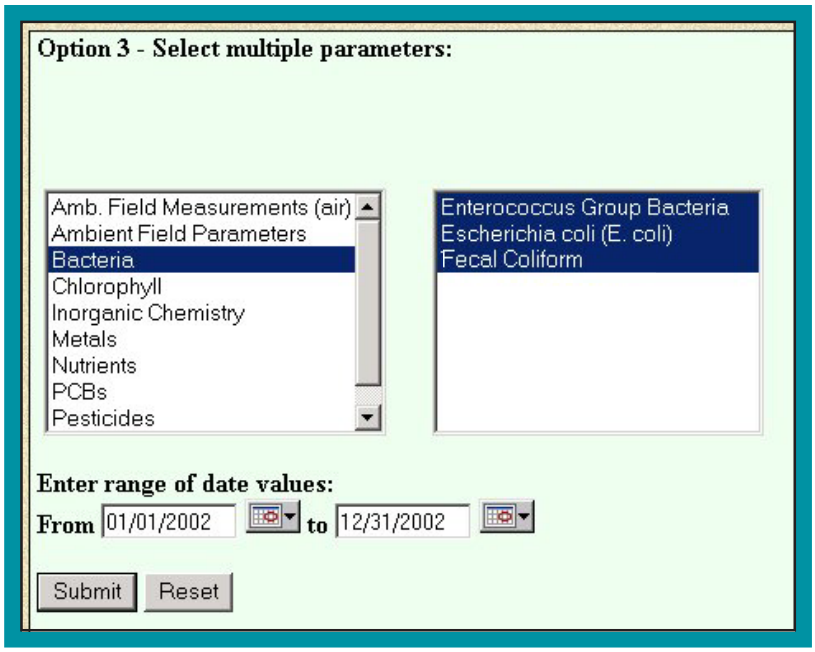


Figure 2. *After choosing stations, the next screen in a basic search allows for selection of parameters and dates.*

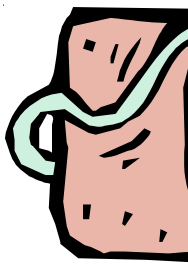
hanced Ambient Surface Water Monitoring FY02," and hit "submit." Notice the new group of stations available. For a list of project names and descriptions please see "click here" located in the first paragraph of the IASTORET homepage.

Selecting Stations

Monitoring locations are called stations. The station page, which appears on your screen after choosing the AMB2002 project, gives you three options for selecting stations: 1) by individual station name, 2) by county, and 3) by watershed(s).

As illustrated in Figure 1, pick the top four stations from the station selection screen (use the Windows standard "ctl" or "shift" key for multiple selections) and hit "submit."

Selecting Parameters



Once you have pressed submit, the new page presents you with three options for selecting parameters. The first option is a download of all data based on the date range you provide. The second option allows you to select up to three parameter values and date ranges of your choosing. The third option allows you to select a group of parameters. Using option 3, click on the "Bacteria" group and notice the three available bacteria types that display on the right select box (Figure 2). Parameters listed in selection boxes are dynamically generated, based on the stations you selected. If a parameter was tested at one or more of your stations, it will appear in the list.

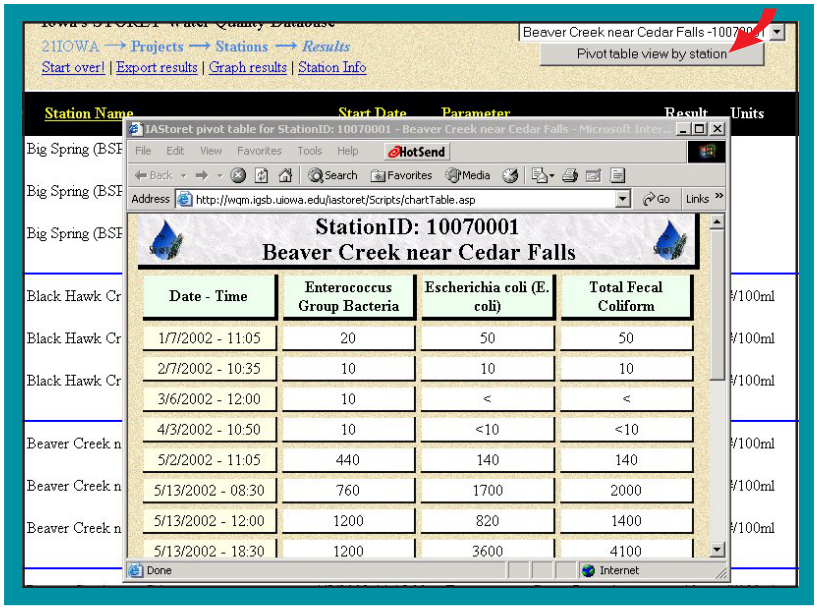


Figure 3. *Table showing results from a particular water quality monitoring station (in this case Beaver Creek near Cedar Falls) transposed by column.*

Using the "shift" key select all three bacteria parameters, "Enteroccocus," "*E. coli*," and "Fecal Coliform." Enter

a date range of 01/01/2002 to 12/31/2002. Dates can be typed in or you can use the pop-up calendar function by clicking on the calendar icon to the right of the text box. After entering the dates, hit the "submit" button.

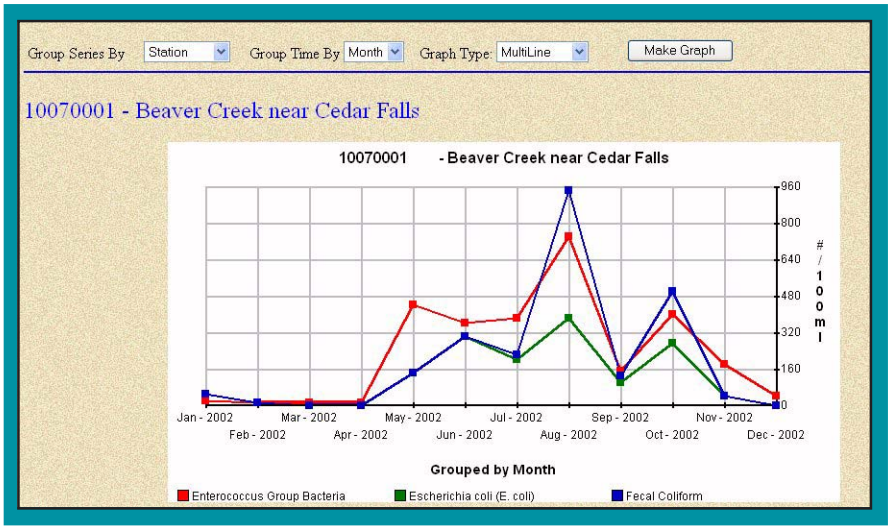


Figure 4. *Graphing the results by stations, in this case Beaver Creek near Cedar Falls.*

Displaying Values for Selected Stations

Data displayed on the results page are sorted by station ID. Click the highlighted headers for a different option, for example by date (click "Start Date").

In the header bar (look for the red arrow in Figure 3), you will see a large button labeled "pivot table" with a drop-down box of stations above it. Select a station from the drop-down box and click on the "pivot table" button. Figure 3 illustrates the screen that will show the values transposed by column. To close out of this window, click the "X" in the top right corner. You can get values for different stations by using the drop-down menu and then pressing the "pivot table view by station" button.

Graphing Results

To graph the results from each station, click on the "Graph Results" button in the header bar. This brings up a new window with graphing options. DNR Ambient data is collected once a month, so change the "Group Time By" drop-down box to "month" and the "Graph Type" to "Multiline" to display all three parameters on the same plot. Now hit the "Make Graph" button to see the graphs (Figure 4). Scroll down to see graphs for each station. Hovering your mouse pointer over any data point will display the actual value for that point.

You can also plot the data by parameter. To do this change

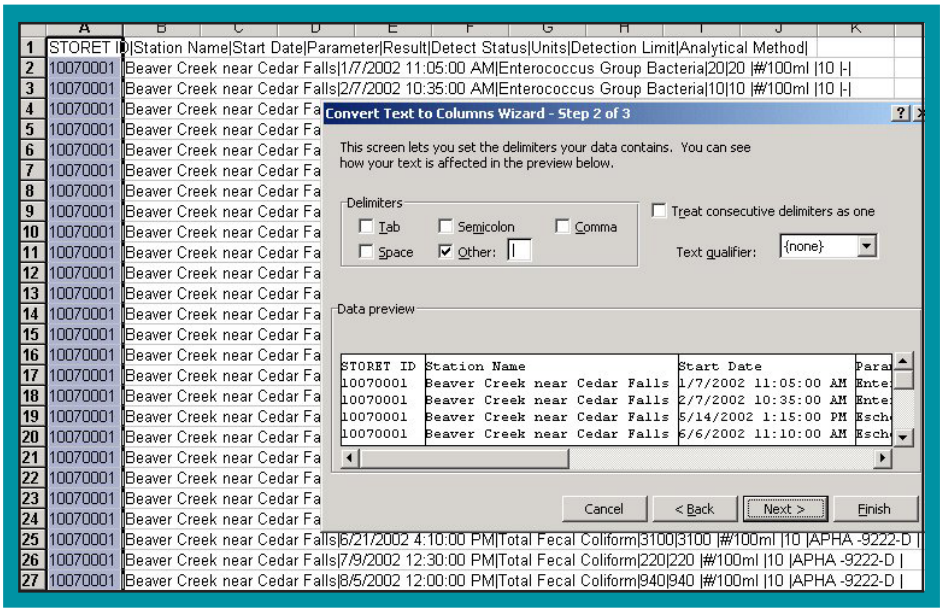


Figure 5. *Exporting data using the pipe delimited text format.*

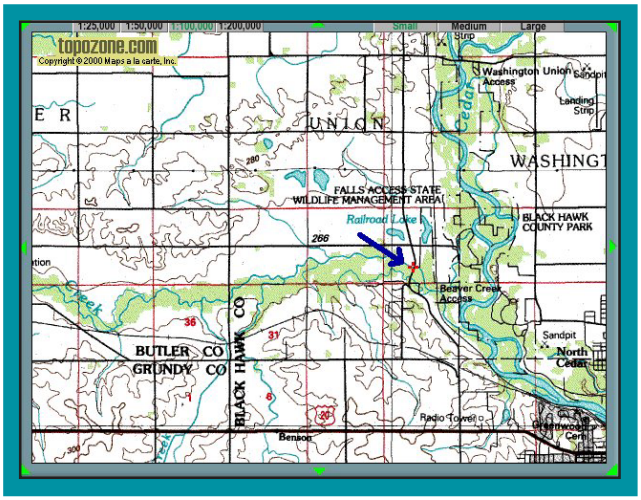


Figure 6. *Topographic map showing the station located at Beaver Creek near Cedar Falls.*

the "Group Series By" drop-down to "Parameter" and click the "Make Graph" button. Scroll down to see graphs for each parameter. The intent of the graphing option is not to replace traditional graphing tools like Excel™ or Sigma Plot™, but rather to give you a quick view of your data selection. You can print these graphs from your browser. When you are done, close the Graph window to return to the results page.

Exporting Data

You can export your data in xml or pipe delimited text format by clicking on the "Export Results" button in the header bar. Once you have chosen "pipe delimited text file" in export results, select all data, copy the results, and paste them into Excel™. To separate your data into columns, click the "Data" menu option in Excel™ and scroll down to "text to columns." The table that appears should already be set to delimited. Next, switch your delimiter from "Tab" to "Other," and enter a pipe (vertical bar "|"). Change the text qualifier to "{none}," and click "finish" (Figure 5). Once you are finished, close the Export window to return to the results page.

Locating the Station on a Topographic Map

Click on the "Station Info" on the header bar for detailed information on your stations. Clicking on the "STORET ID" will plot the station for you on a topographic map. The station is marked by a small, red cross, and will be approximately in the center of the map (Figure 6).

This concludes a brief tour of IASTORET's new web retrieval system. Please send questions and comments to Joost Korpel (jkorpel@igsb.uiowa.edu).

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Water Monitoring Program Web Site – wqm.igsb.uiowa.edu

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